OPACITY MONITORING

Purpose

This Meteorology and Air Quality Group (MAQ) procedure describes the process to record and report opacity readings of smoke emissions as required by New Mexico Administrative Code, 20 NMAC 2.61, and as required under the LANL Operating Permit with the New Mexico Environment Department.

Scope

This procedure applies to the individuals in MAQ assigned to record and report smoke readings at the LANL co-generation plant at TA-3 building 22 or at the steam plant at TA-21 building 357 for compliance with New Mexico Administrative Code 20 NMAC 2.61. MAQ will be notified by the Support Services Contractor whenever a reading is to be made. This procedure does not cover the reading of the opacity, which may be performed by trained MAQ or Support Services Contractor personnel.

In this procedure

This procedure addresses the following major topics:

Hazard Control Plan

The hazard evaluation associated with this work is documented in Attachment 1: Initial risk = **low**. Residual risk = **minimal**. Work permits required: none. First authorization review date is one year from group leader signature below; subsequent authorizations are on file in group office.

Signatures

Prepared by: Harold A Martinez Harold Martinez, MAQ	Date: 5-1-03
Approved by: Steve Story Steve Story, Operating Permit Project Leader	Date: 5-1-03
Approved by: Terry Morgan Terry Morgan, QA Officer	Date: 5/6/03
Approved by: Jean M Dewart Jean Dewart, MAQ Group Leader	Date: 5/7/03

03/10/03
03/10/03

General information about this procedure

Attachments

This procedure has the following attachments:

Number	Attachment Title	No. of pages
1	Hazard Control Plan	2
2	Visible Emission Observation Form	1

History of revision

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description of Changes
0	5/27/99	New document.
1	5/7/03	Quick-change revision to update names of organizations and add HCP as attachment.

Who requires training to this procedure?

The following personnel require training before implementing this procedure:

- Personnel assigned to track or make smoke readings

NOTE: Those making smoke readings must be trained and certified through the smoke reading class for the EPA METHOD 9 (Wrangel Method) (offered through the State of NM). Making smoke readings is not covered by this procedure. Individuals trained to the smoke reading method must be re-certified every six months.

Training method

The training method for this procedure is **read-only** (**self-study**) and is documented in accordance with the procedure for training (MAQ-024).

Prerequisites

In addition to training to this procedure, the following training is also required prior to performing this procedure:

- MAQ-011, “Logbook Use and Control”

General information, continued

Definitions specific to this procedure

Malfunction: Any sudden and unavoidable failure of air pollution control equipment, process equipment or process to operate in an expected manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable equipment breakdown shall not be considered a malfunction. (20 NMAC 2.07 Section 107 Definitions)

Startup: the setting into operation of any air pollution equipment, process equipment or process for any purpose, except routine phasing in of process units. (20 NMAC 2.07 Section 107 Definitions)

References

The following documents are referenced in this procedure:

- MAQ-011, "Logbook Use and Control"
- MAQ-024, "Personnel Training"

Note

Actions specified within this procedure, unless preceded with "should" or "may," are to be considered mandatory guidance (i.e., "shall").

Smoke reading

Need for smoke readings

The regulatory driver for this activity is the New Mexico Administrative Code, 20 NMAC 2.61. The need for smoke readings occurs when the plants switch from natural gas to fuel oil, when a cold startup is performed (especially if using fuel oil), during periods of malfunction (see definitions), or when conducting interlock testing of the boiler control circuits. When fuel oil is used, the boilers may not fully combust the fuel, which may result in visible smoke or other emissions.

Support Services Contractor personnel will normally conduct the readings and will notify MAQ whenever a reading is required. If **Support Services Contractor** cannot conduct the reading, a trained MAQ member should make the reading. An adequate smoke reading by the Wrangel method cannot be done at night; thus no readings can be done after dark.

Note on diesel vehicles

LANL maintains a number of diesel-powered vehicles for construction purposes. The regulation 20 NMAC 2.61 exempts these vehicles during cold engine startup. No opacity violations have been reported during warm engine operation of these vehicles. Rather than having a program to read opacity on these vehicles, LANL has a maintenance program which follows manufacturers' recommendations to ensure that vehicles are running efficiently. Based on discussions with the NMED, if a violation of the opacity standard for these vehicles is noted, immediate vehicle maintenance would be required.

Locations for smoke readings

There are two permitted sources that may be involved:

- co-generation plant at TA-3, building 22
- the steam plant at TA-21, building 357.

Performing work safely

DO NOT perform work under conditions you consider unsafe. Before beginning work described in this procedure, review safety needs and requirements, identify hazards, and develop hazard mitigation measures. Be aware that facility configurations and hazards may change between visits.

Stormy weather – Reschedule or delay work activities as necessary to avoid areas experiencing severe or dangerous weather.

Recording readings

Notification of need for smoke readings

This smoke reading process is initiated by a call from the Support Services Contractor to MAQ advising that they will be doing interlock testing of their boiler control circuits or that they must switch fuels.

As soon as possible after notification, MAQ may contact the plant operators to coordinate operations and the opacity observation (if MAQ either needs to make the reading or wants to observe their reading).

Conduct smoke reading

A strategic location must have been selected from earlier operations or chosen upon arrival at the site. The site path chosen and the observation must be in accordance with the rules of the EPA Method 9 (Wrangel Method). Use the form in Attachment 2 (Visible Emission Observation Form) to record the readings.

Recording readings

Insert completed form in the logbook. Make all entries in accordance with the requirements of MAQ-011.

Receive readings from contractor

All readings, even those made by Support Services Contractor, will be recorded by MAQ. The **Support Services Contractor personnel** send the appropriate form to MAQ within 10 working days. Insert this information in the logbook.

Reporting readings

If the average opacity reading is over 20%, the smoke reader (either support services contractor or MAQ individual) *immediately* notifies the MAQ Operating Permit Project Leader. MAQ must verbally report the reading to the NMED within 24 hours and follow up with a written report within 10 days (pursuant to the requirements in 20 NMAC 2.7 Section 110). The report must include why it occurred and what is being done to mitigate it.

If the average opacity reading is under 20%, it does not need to be reported to the NMED. File the report in the logbook.

Records resulting from this procedure

Records

The following records are generated as a result of this procedure (**NOTE**: logbooks are controlled according to requirements in MAQ-011):

- Completed Visible Emission Observation Form in the Smoke Readers Logbook

HAZARD CONTROL PLAN

1. The work to be performed is described in this procedure.
"Opacity Monitoring"

2. Describe potential hazards associated with the work (use continuation page if needed).

Animal encounters (snakes, mountain lions, etc.)
Weather (cold, lightning, etc.)
Trips and falls.

3. For each hazard, list the likelihood and severity, and the resulting initial risk level (before any work controls are applied, as determined according to LIR300-00-01, section 7.2)

Animal encounters -- critical / remote = minimal.
Weather -- catastrophic / remote = low.
Falls -- critical/improbable = low
Tripping -- moderate/ occassional = low.

Overall *initial* risk: ☐ Minimal ☒ Low ☐ Medium ☐ High

4. Applicable Laboratory, facility, or activity operational requirements directly related to the work:
☒ None ☐ List: Work Permits required? ☒ No ☐ List:

HAZARD CONTROL PLAN, continued

5. Describe how the hazards listed above will be mitigated (e.g., safety equipment, administrative controls, etc.):

Animal encounters -- Employee Orientation includes training and awareness of animal hazards.
Weather -- Employee Orientation includes training and awareness of weather hazards.
Trips and falls -- the Employee Orientation includes training and awareness of tripping and falls.

6. Knowledge, skills, abilities, and training necessary to safely perform this work (check one or both):

☒ Group-level orientation (per MAQ-032) and training to this procedure.

☐ Other → See training prerequisites on procedure page 3. Any additional describe here:

Appropriate site-specific training, if needed for specific site visited.
CPR/First Aid training

7. Any wastes and/or residual materials? (check one) ☒ None ☐ List:

8. Considering the administrative and engineering controls to be used, the *residual* risk level (as determined according to LIR300-00-01, section 7.3.3) is (check one):

☒ Minimal ☐ Low ☐ Medium (requires approval by Division Director)

9. Emergency actions to take in event of control failures or abnormal operation (check one):

☐ None ☒ List:

For all injuries, provide first aid and see that injured person is taken to Occupation Medicine (only if immediate medical attention is not required) or the hospital. For any exposed, energized electrical wires, contact JCNNM or the appropriate authority to turn off the power. Follow all site specific emergency plans for any radiation or explosives emergencies.

Signature of preparer of this HCP: This HCP was prepared by a knowledgeable individual and reviewed in accordance with requirements in LIR 300-00-01 and LIR 300-00-02.

_____	_____	_____
Preparer(s) signature(s)	Name(s) (print) /Position	Date

Signature by group leader on procedure title page signifies authorization to perform work for personnel properly trained to this procedure. This authorization will be renewed annually and documented in ESH-17 records. Controlled copies are considered authorized. Work will be performed to controlled copies only. This plan and procedure will be revised according to MAQ-022 and distributed according to MAQ-030.

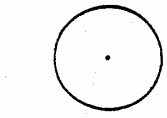
VISIBLE EMISSION OBSERVATION FORM

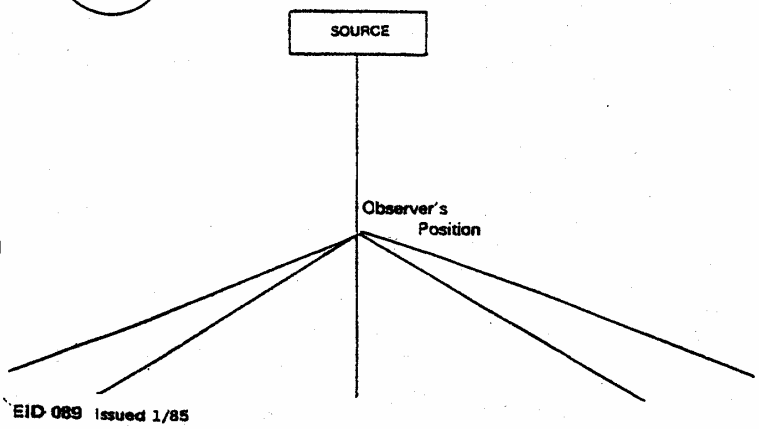
Environmental Improvement Division
RECORD OF VISUAL DETERMINATION OF OPACITY

OURCE					OBSERVATION DATE					START TIME			STOP TIME		
LOCATION					Sec. / Min.	0	15	30	45	Sec. / Min.	0	15	30	45
Type of Source	Type of Control Equipment				1					13				
Describe Emission Point (top of stack, etc.)					2					14				
Height Above Ground Level Feet	Height Relative to Observer Feet				3					15				
Distance from Observer Yards	Direction from Observer				4					16				
Description of Plume (stack exit only) ☐ Lofting ☐ Trapping ☐ Looping ☐ Fanning ☐ Coning ☐ Fumigation					5					17				
Emission Color	Plume Type ☐ Continuous ☐ Fugitive ☐ Intermittent				6					18				
Water Droplets Present? ☐ NO ☐ YES If YES, droplet plume is ☐ Attached ☐ Detached					7					19				
At what point in the plume was opacity determined?					8					20				
Describe Background (i.e. blue sky, trees, etc.)					9					21				
Background Color	Sky Conditions				10					22				
Wind Speed mph	Wind Direction (i.e. from North to South)				11					23				
nbient Temperature °F	Wet Temperature °F	Relative Humidity %			12					24				

COMMENTS:	Average Opacity / Range of Opacity Readings Min.: Max.:
	OBSERVER (please print) Name: Title:
	Signature / Date
	Organization / Certification Date

Draw Arrow in North Direction





IMPORTANT: Please indicate the following by sketch:

I acknowledge receipt of a copy of these visible emissions observations.

Signature: _____

Title: _____

Date: _____

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